

## CLAIMS:

1. Receiver (10) arranged to simultaneously receive at least a first (S1) radio frequency signal having a first frequency band (1) and a second radio frequency signal (S3) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the receiver comprising:
  - 5 - frequency down-conversion means (32,33) for frequency down-converting the at least first (S1) and second radio frequency signals (S3) to at least a first (S2) and a second (S4) lower frequency signal;
  - multiplexing means (34) for sequentially multiplexing the at least first (S2) and second lower frequency signals (S4) into a frequency multiplexed signal (S5).
- 10 2. Receiver (10) according to claim 1, wherein (10) the receiver further comprises an analogue to digital converter (35) for digitizing the frequency multiplexed signal (S5).
- 15 3. Receiver (10) according to claim 2, wherein the receiver (10) further comprises demultiplexing (36) means for demultiplexing the digitized frequency multiplexed signal (S6) into at least a first (S7) and a second (S8) signal.
4. Transmitter (20) arranged to simultaneously transmit at least a first radio frequency signal (S15) having a first frequency band (1) and a second radio frequency signal (S16) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the transmitter (20) comprising:
  - 20 - signal multiplexing means (41) for sequentially multiplexing at least a first (S10) and a second (S11) signal into a frequency multiplexed signal (S12);
  - 25 - demultiplexing means (48) for demultiplexing the frequency multiplexed signal (S12) into at least a first (S13) and a second (S14) lower frequency signal;
  - frequency up-converting means (44,45) for frequency up-converting the first lower frequency signal (S13) into the first radio frequency signal (S15) and for frequency up-

converting the second lower frequency signal (S14) into the second radio frequency signal (S16).

5. Transmitter (20) according to claim 4, wherein the at least first (S12) and  
5 second (S11) signals are digital signals.

6. Transmitter (20) according to claim 5, wherein the multiplexing means (41)  
comprises a digital to analogue converter (53) for converting the sequentially multiplexed  
first and second digital signals (S12d) to a frequency multiplexed signal (S12).  
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7. Transceiver (50) comprising a receiver (10) that is arranged to simultaneously  
receive at least a first radio frequency signal (S1) having a first frequency band (1) and a  
second radio frequency signal (S3) having a second frequency band (3) that is at least partly  
overlapping the first frequency band (1), the receiver (10) comprising:  
15 - signal conversion means (32,33) for frequency down-converting the at least  
first (S1) and second radio frequency signals (S3) to at least a first (S2) and a second (S4)  
lower frequency signal;  
- multiplexing means (34) for sequentially multiplexing the at least first (S2)  
and second lower (S4) frequency signals into a frequency multiplexed signal (S5);  
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8. Transceiver (50) according to claim 7, the transceiver further comprising a  
transmitter (20) that is arranged to simultaneously transmit at least a third radio frequency  
signal (S15) having a third frequency band (1) and a fourth radio frequency signal (S16)  
having a fourth frequency band (3) that is at least partly overlapping the third frequency band  
25 (1), the transmitter (20) comprising:  
- signal multiplexing means (41) for sequentially multiplexing at least a third  
(S10) and a second (S11) signal into a frequency multiplexed signal (S12);  
- demultiplexing means (48) for demultiplexing the frequency multiplexed  
signal (S12) into at least a third (S13) and a fourth (S14) lower frequency signal;  
30 - frequency up-converting means for frequency up-converting the third lower  
frequency signal (S13) into the third radio frequency signal (S15) and for frequency up-  
converting the fourth lower frequency signal (S14) into the fourth radio frequency signal  
(S16).

9. Method for receiving at least a first radio frequency signal (S1) having a first frequency band (1) and a second radio frequency signal (S3) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the method comprising the steps of:

- 5 - frequency down-converting the at least first (S1) and second (S3) radio frequency signals into at least a first lower frequency signal (S2) and a second lower frequency signal (S4);
- sequentially multiplexing the at least first (S2) and second (S4) lower frequency signals into a frequency multiplexed signal (S5).

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10. Method for transmitting at least a first radio frequency signal (S15) having a first frequency band (1) and a second radio frequency signal (S16) having a second frequency band (3) that is at least partly overlapping the first frequency band (1), the method comprising the steps of:

- 15 - sequentially multiplexing the at least first (S10) and a second signals (S11) into a frequency multiplexed signal (S12);
- demultiplexing the frequency multiplexed signal (S12) into at least a first (S13) and a second lower frequency signal (S14);
- frequency up-converting the first lower frequency signal (S13) into the first
- 20 radio frequency signal (S15) and the second lower frequency signal (S14) into the second radio frequency signal (S16).